City of San Diego
Long-Term Resource Management Options
Strategic Plan (LRMOSP)

Resource Management Advisory Committee

Third Meeting

February 20, 2008

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Agenda

I. Welcome & Introductions – Lewis Michaelson (Katz & Associates)

II. Refined Screening Criteria – Katz & Associates

III. Zero Waste – Clements Environmental

IV. Resource Recovery Parks – Clements/BAS

V. Conversion Technologies – Clements

VI. Waste to Energy – Clements

VII. Landfill Optimization Techniques – Bryan A. Stirrat & Associates

VIII. Alternative Disposal Options – Bryan A. Stirrat & Associates

IX. Next Meeting

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II. Refined Screening Criteria

High – Medium – Low Feasibility

- Financial Viability
- Technical Viability
- Regional Viability
- Environmental Viability
- Capacity Optimization
- Sustainability

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III. Zero Waste

Chip Clements, P. E. - Clements Environmental
Stephen Grealy – City of San Diego/ESD

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ZERO WASTE
What is it?
Paradigm Shift: from Waste Disposal to Resource Management

The goal of zero waste is to reduce, reuse, recycle, or convert to beneficial use the resources now going to disposal so as to achieve improved diversion levels.

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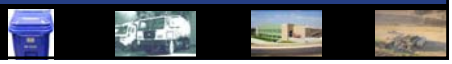

Examples of Zero Waste Actions

- UPSTREAM
  - Increase useful life of consumer products
  - Reduce the amount of waste in products and packaging
  - Increase recycled content of products and packaging
  - Make products and packaging more recyclable
- DOWNSTREAM
  - Consumption: Reduce consumption habits of society
  - Collection Sector: Increase diversion rates
  - Processing Sector:
    - Increase processing capacity for recovery and recycling
    - Develop Conversion Technologies
  - Disposal Sector
    - Convert existing landfills to BioCells or reclaim through mining
    - Transform landfills to Inert Residuals Repositories

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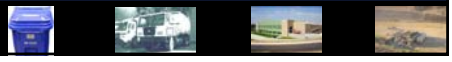

What is the City Doing, Now?

- Council Ordinances/Policies/Regulations
- Expansion of Organics Diversion
- Outreach and Education
- Legislative Initiatives

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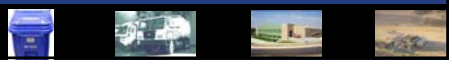

Zero Waste Infrastructure Examples

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SAFE Center
(Solvents, Automotives, Flammables & Electronics)

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Transfer Station - CLARTS

Central Los Angeles Recycling and Transfer Station

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Transfer Station II (Oxnard)

11

Loading Transfer Truck

12

Curbside MRF

13

Commercial MRF

14

C&D Processing

15

Sorting C&D

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C&D Products

Greenwaste Chip & Grind

Composting

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IV. Resource Recovery Parks

Chip Clements, PE,
Clements Environmental

Christine Arbogast, PE,
Bryan A. Stirrat & Associates

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Recovery Parks

- Industrial: Provide campus for symbiotic zero waste facilities (recycling, power, manufacturing)
- Public Service: Provide convenient drop off for local residents (usually free), ReUse Store

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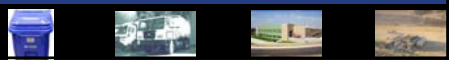

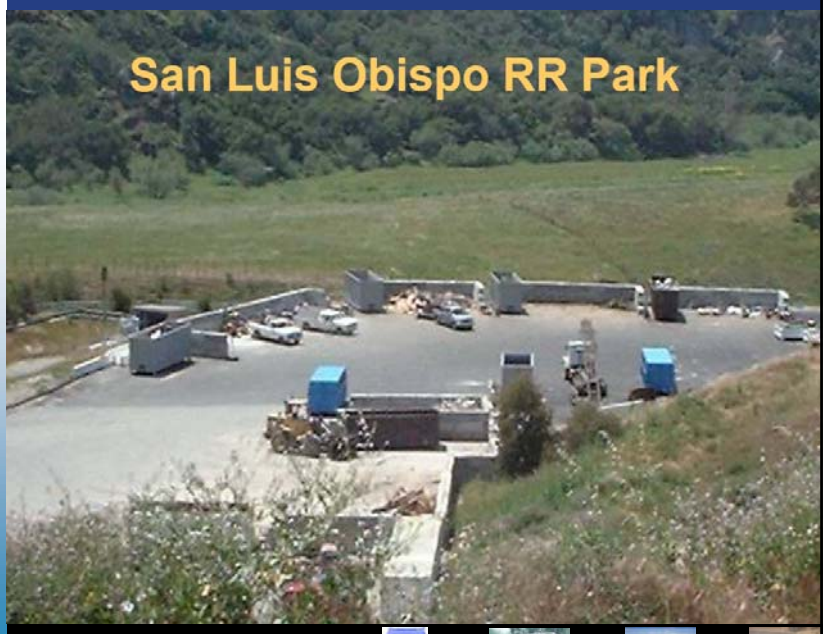

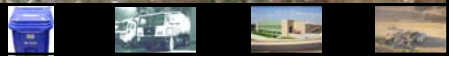

Monterey Resource Recovery Park

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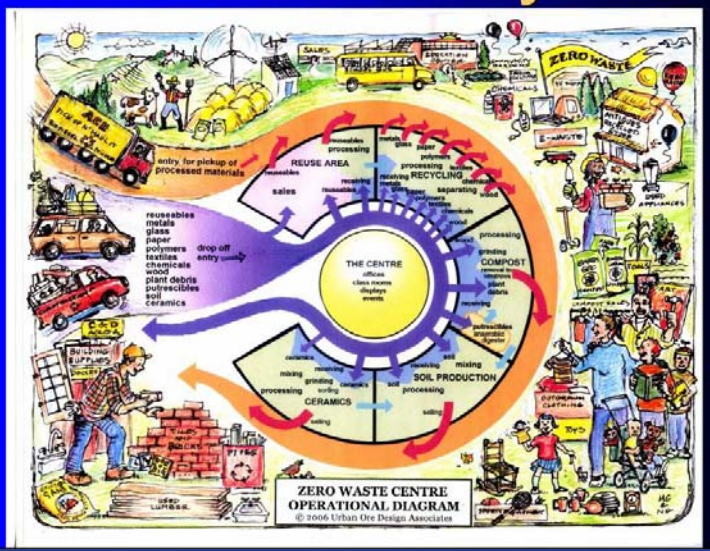
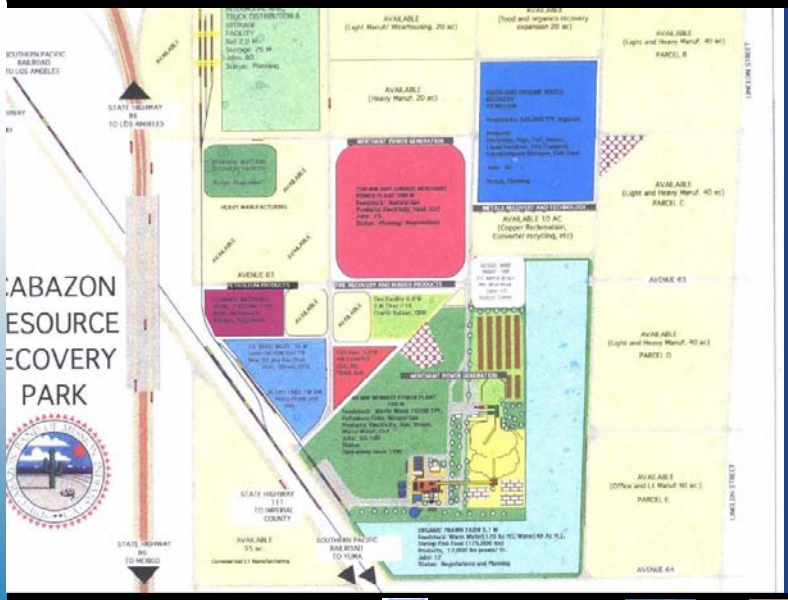
Urban Ore RR Park, Berkeley CA

Resource Recovery Park



Cabazon Resource Recovery Park



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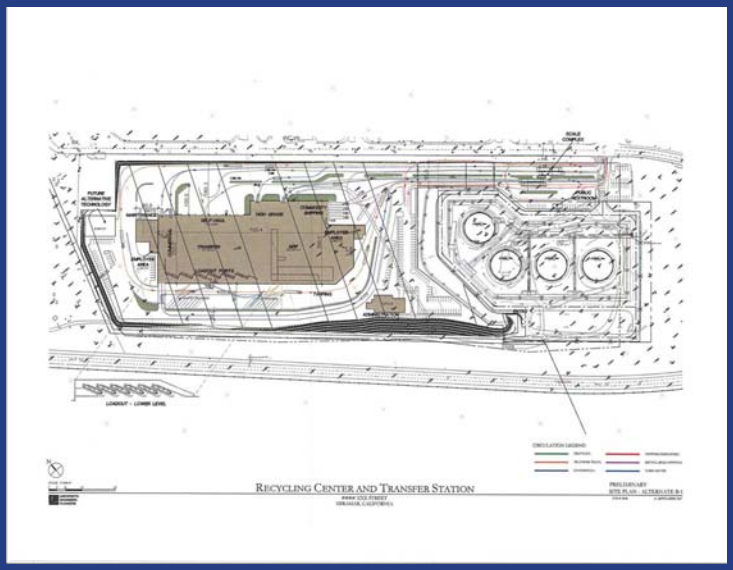
Miramar Recycling & Transfer Station Feasibility Study



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V. Conversion Technologies

Chip Clements, PE,
Clements Environmental

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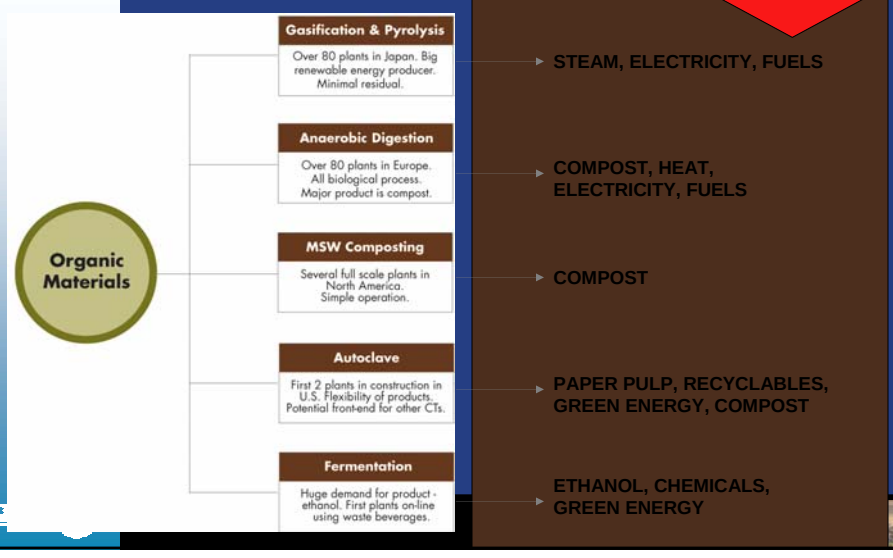
CONVERSION TECHNOLOGIES



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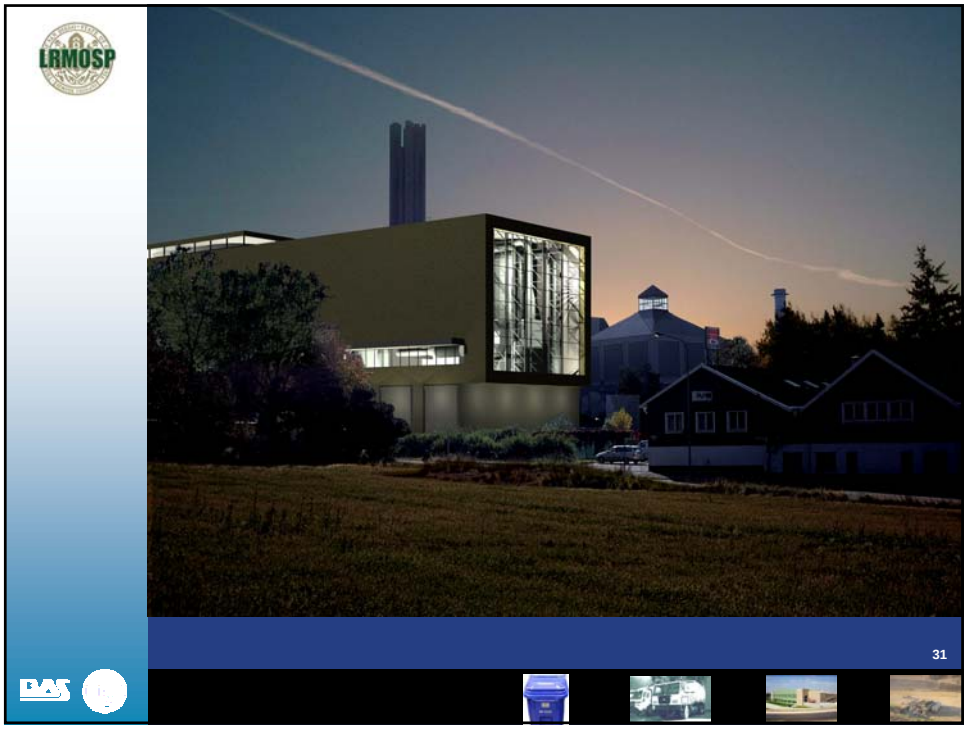
LRMOSP
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LRMOSP
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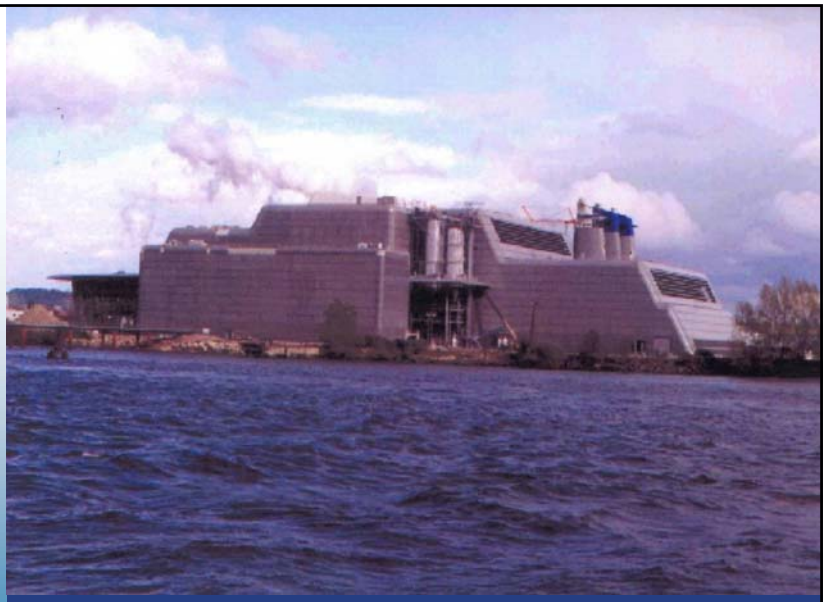

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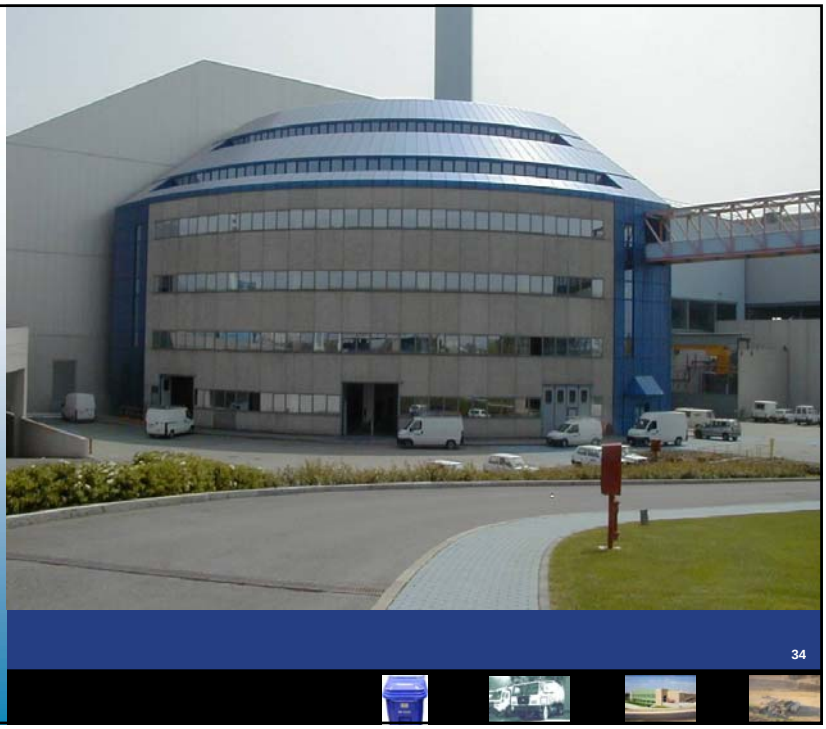

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Biomass Power Plant (Madera)

DRANCO (Brecht, Belgium)

ENTRY AND WEIGH SCALES

GAS PRESSURE EQUALIZATION TANK, DIGESTER BEHIND

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DIGESTER RESIDUE FROM DEWATERING

FORCED AIR SYSTEM – AEROBIC MATURATION

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Thermoselect Facility, Chiba, Japan

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Valorga Facility Freiberg, Germany

Changing World Technologies Carthage, MO

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Changing World (Synthetic Fuels)

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California CT Update

- **City of Los Angeles**
  - **Phase I**: CT Feasibility Study and short list (complete)
  - **Phase II**: RFP for commercial scale (>800 TPD) & emerging technology (<200 TPD)
    - ➢12 responses received
    - ➢Siting study ongoing
- **County of Los Angeles**
  - Phase I & II Feasibility Studies Complete
  - RFO issued January 2008
  - 4 CTs and 4 MRFs in competition

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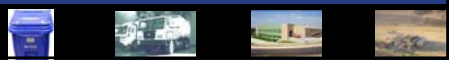

California CT Update (cont.)

City & County of Santa Barbara

- **Phase I -** Feasibility and short list (complete)
- **Phase II** - RFI issued; RFP development underway
  - ➢Site selected at Tajiguas Landfill

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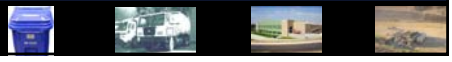

- **Zero Waste Plans including CT elements**
  - •City of LA
  - •City of San Diego
  - •City of San Jose
- **California Government**
  - •CIWMB support
  - •AB 32 Climate Action
  - •Renewable Fuels
  - •Renewable Energy (RPS 20%)
- **Private Sector involvement in CT feasibility and project concepts**
  - •CR&R (Perris)
  - •Rainbow (Huntington Beach)
  - •Burrtec (Riverside)
  - •Community Recycling (Sun Valley)
  - •Republic (Anaheim)
- **Private Sector CT projects and demonstration plants**
  - •Blue Fire Ethanol (Lancaster) (El Sobrante)
  - •IES (Romoland)
  - •World Waste International (Anaheim)
  - •CR3 Autoclave (Salinas)

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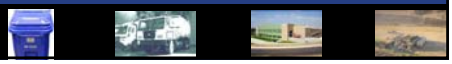

- **Responses:**
- **Commercial Plants**
  - Zia Metallurgical (Thermal)
  - Interstate Waste Technologies (Gasification)
  - Covanta Energy (WTE)
  - Wheelabrator (WTE)
  - WRSI (AD)
  - Community Recycling (MRF, AD, Biomass Power, Composting)
  - Carbon Sequestration (Gasification)
  - CR+R & ArrowBio (AD)
  - Urbaser & Keppel Seghers (WTE, Gasification, AD)
  - Rainbow & IES (Gasification)
- **Emerging Technology**
  - Plasco (Gasification)
  - CR+R & ArrowBio (AD)

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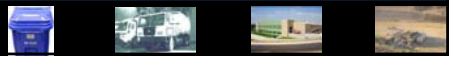

Siting Factors

- Zoning Issues
  - Prop H limitations
- Access - major roads
- Close access to freeways
- Distant from “sensitive receptors”
  - Residential areas
  - Schools
  - Hospitals
- Equitable distribution across City
- Service Area: Regional Vs. Local wasteshed
- Reduction in truck traffic
- Aesthetics

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Key Features

- Environmental Impacts
- Aesthetics
- Overall Diversion (including recycling)
- Resource Recovery
- Renewable Energy
- Cost (bang for buck)
- Enhance existing system
- Economic Benefit
- Other Products

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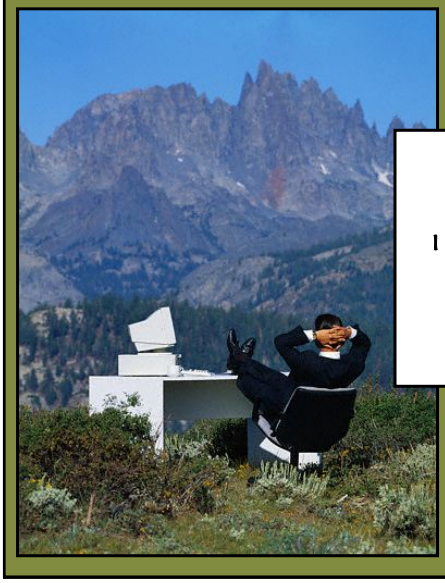

"Some people see things as they are and say why?
I dream of things that never were and say why not?"
- Robert Kennedy

VI. Waste to Energy

Chip Clements, PE,
Clements Environmental

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WTE Plant – SERRF (Long Beach, CA)

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Lee County, Florida

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BREAK TIME !!!

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VII. Landfill Optimization Techniques

Sonia Nasser, PE
Bryan A. Stirrat & Associates

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Landfill Optimization

1. Compaction
2. Alternative Daily Cover
3. Leachate Recirculation
4. Steam Injection
5. Bio-cell – Bioreactor
6. Landfill Reclamation

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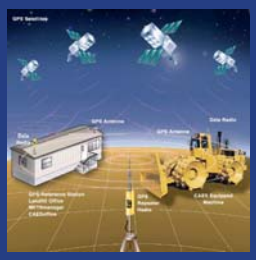
1. Compaction

- Uniform lift thickness
- Cell Capacity Extended
- Less Cover Material



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2. Alternative Daily Cover - Tarps

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3. Leachate Recirculation

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4. Steam Injection
Miramar Landfill Pilot Study

Photo: STI Engineering

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Push-In Collectors & Injectors

Photo: STI Engineering

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Steam Injector

Photo: STI Engineering

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Boiler – Creates Steam

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Steam Injection Pipeline

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5. BioReactor

Yolo County Landfill – California

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6. Landfill Reclamation

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Landfill Reclamation

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Landfill Reclamation

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Landfill Reclamation

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VIII. Alternative Landfill Disposal Options

Christine Arbogast, PE
Bryan A. Stirrat & Associates

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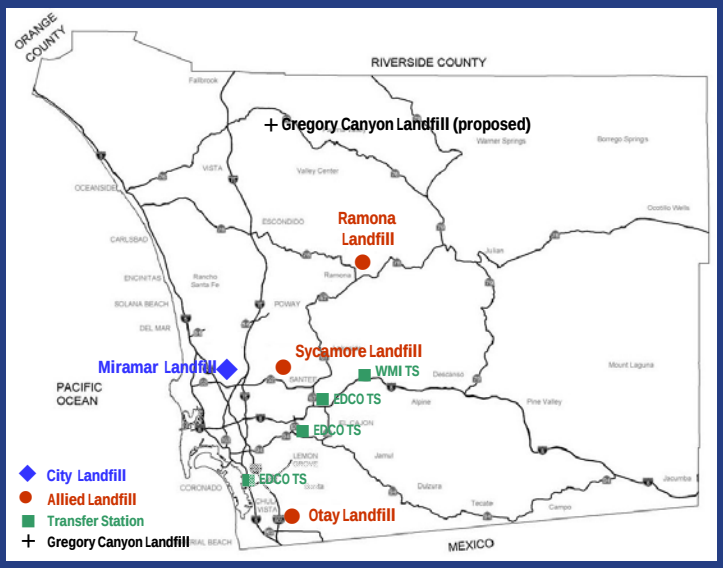
In-County Disposal Sites



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Sycamore Landfill

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Gregory Canyon, San Diego

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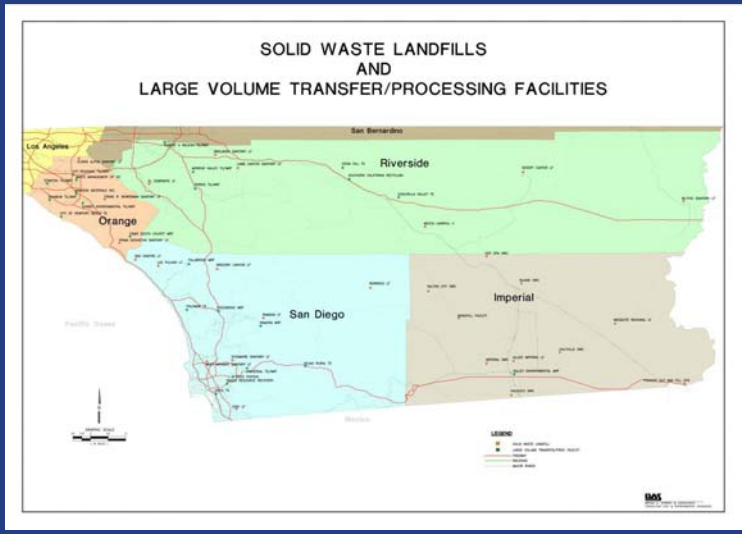
Out-of-County Disposal Options



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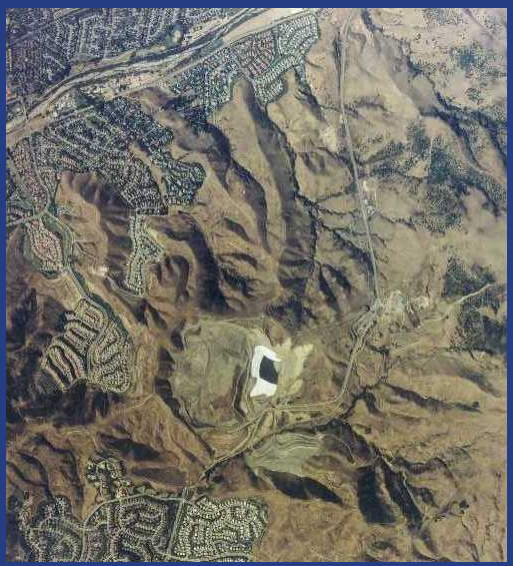
Prima Deshecha, Orange County, CA



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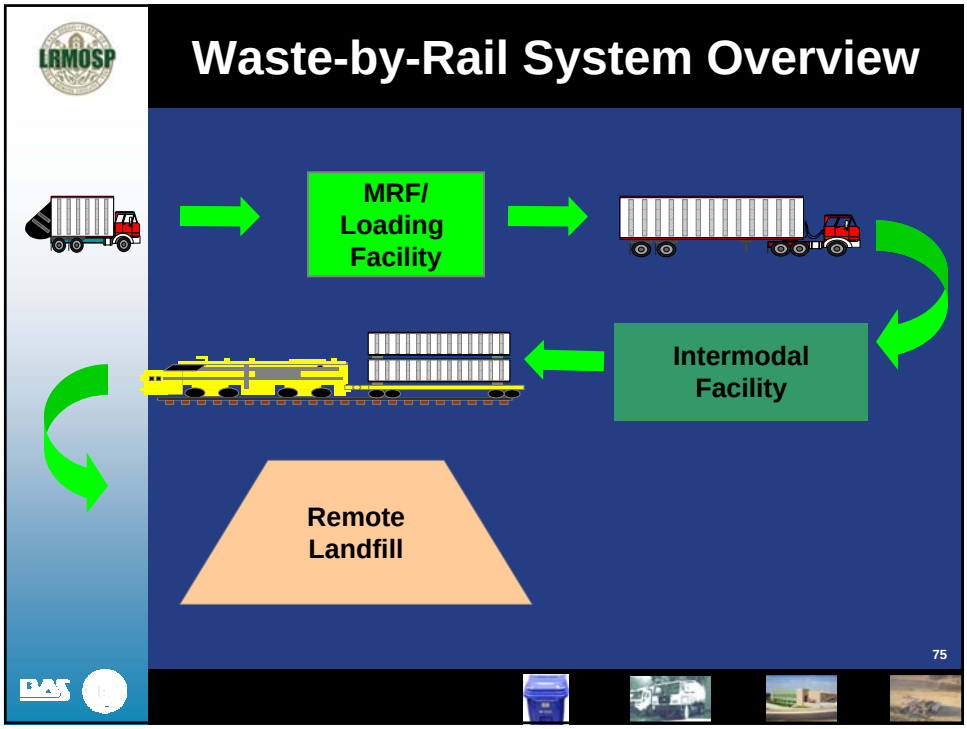
Waste-by-Rail System Overview
MRF/
Loading
Facility
Intermodal
Facility
Remote
Landfill
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Puente Hills
Materials Recovery Facility
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Puente Hills MRF

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Typical Intermodal Operations

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Puente Hills Intermodal Facility

Puente Hills Intermodal Facility

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Rail Haul

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Rail Haul
Mesquite Regional Landfill
Imperial County

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IX. Next RMAC Meeting

Save the Date:

Wednesday
April 30, 2008
2:00 pm

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